

Application/Control No.: 10/824,389
Examiner: NGUYEN, HANH N

REMARKS

The Examiner has rejected claims 1, 5-7, 10-12 and 14 under 35 U.S.C. §103(a) as being anticipated by Esswein (U.S. Patent No. 5,327,032, herein Esswein).

Claim 1 points out non-obvious subject matter because it recites a motor configuration that provides for a low noise, low cost and high performance device. Claim 1 points out a motor that possesses a fixed rotary direction motor that possess maximum magnetic flux when it is in static positioning. Additionally, Claim 1 points out magnetic flux separation notches that permit wide-geometry polar expansion without the interposition of additional materials.

To the contrary, Esswein discloses a rotary actuator. The device in Esswein is limited to functions such as motor controlled valves and the like. This is evidenced by the prior art documents cited in its description. The objective of such an actuator is to generate consistent reproducible movement of the device. Therefore, it must rotate precisely in a fixed way and direction. That precision movement is obtained by means of obstructions to the magnetic flux in the stator realized through different kinds of slots (22 or 22a, 24 or 24a, 26 or 26a) provided on the ring 10. These obstructions allow the rotor, when the electromagnetic induction is not present, to align itself with the poles and for the rotor to rotate in one direction at the moment of device activation.

As such, Esswein points out a device that comprises a plurality of slots on a stator ring to determine the position of a rotor with an un-energized actuator. This is consistent with the workings of an actuator designed to control a device in order to have a repeatable movement.

The present invention operates differently than an actuator device as described in Esswein. The device as embodied in claim 1 could not work as a continuous rotary motor, due to the eddy currents induced by the position of the ring with respect to the stator core. More importantly, the static force on a thin ring, as described in Esswein, would become unstable and fail to provide an indication of rotary direction if it were used in the same device as described by claim 1. In the present invention, the core of the magnetic induction body possesses external slots for magnetic separation. This configuration allows, when not energized, for the magnets to be perfectly positioned at 45° from the center of the stator. Furthermore, claim 1 provides for a contiguous

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closure of the polar sections of the stator cores. This geometric configuration allows the motors to displace themselves at 45° from the center of the stator when not energized. As such, the flux from the magnets is divided between two stator poles and when energized, they are of different polarities. This enables rotation by one pole exerting an attractive force while the opposite pole exerts a repulsive force.

Additionally, this single piece construction allows the distribution of the magnetic force across the entire thickness of the induction pole. This is in contrast with the device in Esswein, where the magnetic force is confined to a thin ring.

Lastly, the design of the core is symmetrical to the rotation axis, and therefore does not affect the yielding of the motor. This symmetry is also extended to the separation notches. In the present invention, the notches are placed exactly in the middle of the polar separations. More importantly, the notches determine an enlargement of the appendixes of the core close to the external surface of the rotor. As such, the flux of the magnetic induction distributes itself efficiently around their respective poles.

The cited prior art fails to point out all the elements of the present invention. More importantly, the cited prior art fails to point out all the elements of the present invention either alone or with obvious modification. Merely combining the two opposing extensions of Esswein fails to provide the device as in claim 1. The magnetic separation notches and their orientation are essential for proper functioning of the device in claim 1. Therefore, merely combining the extensions found in Esswein without providing for increased induction pole dimensions and separation notch placement would result in a modified actuator that fails to perform the same function as the device in claim 1. More importantly, any obvious modification of Esswein would teach away from the present invention. Those skilled in the art would not construct an actuator with a single body ring with the appendixes or rods. Primarily, because the single body ring would be redundant due to the fact that an actuator having appendixes or rods would not require a ring. Secondly, as previously stated, the function of Esswein and the device in claim 1 differ significantly. Those skilled in the art would not modify an actuator in order to create the device as in claim 1. As such, it would not be obvious to modify an actuator in a way that would diminish its performance in its specified task. As such, it is impossible for the device in claim 1 to be obvious in light of the prior art.

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Claims 3 and 4 have been rejected under 356 U.S.C. §103(a) as being unpatentable over Esswein (U.S. 5,327,032) in view of Horst (EP 0676853, herein '853 patent).

Applicant notes that claim 3 is dependent on claim 1, and claim 4 is dependent on claim 3. Applicant has previously stated why claim 1 is non-obvious in light of the cited prior art. As such, it would be impossible for claims 3 and 4 to be obvious when the claim from which they depend is non-obvious.

Claims 8 and 9 have been rejected under 356 U.S.C. §103(a) as being unpatentable over Esswein (U.S. 5,327,032) in view of Mavidia et al. (EP 0342733, herein '733 patent).

Applicant notes that claim 8 and 9 are dependent on claim 1. Applicant has previously stated why claim 1 is non-obvious in light of the cited prior art. Therefore, it is impossible for claims 8 and 9 to be obvious in light of the fact that claim 1 is non-obvious.

Claim 13 has been rejected under 356 U.S.C. §103(a) as being unpatentable over Esswein (U.S. 5,327,032) in view of Mavidia et al. (EP 0342733, herein '733 patent) in further view of Mayes et al. (EP 0892490, herein '490).

Applicant notes that claim 13 is dependent on claim 1. Applicant has previously stated why claim 1 is non-obvious in light of the cited prior art. As such, claim 13 is not obvious in light of the cited prior art.

Based on the above, Applicants respectfully submit that the claims of the present invention are in proper form for allowance. Favorable consideration and early allowance are therefore respectfully requested and earnestly solicited.

Respectfully Submitted,



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